

## ***Ixodes vespertilionis* Koch and first report of *Ixodes simplex* Neumann (Acari: Ixodidae) from bats in the Republic of Korea**

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### **Abstract**

Ticks were collected from bats captured in caves, abandoned mines, and under bridges in the Republic of Korea as part of the 65<sup>th</sup> Medical Brigade vector-borne disease surveillance program in collaboration with the National Institute of Biological Resources. A total of seven ticks (1 nymph and 3 larvae of *Ixodes simplex*, and 3 females of *Ixodes vespertilionis*) were removed from 7/141 bats (5.0%). *Ixodes simplex* was collected from both *Rhinolophus ferrumequinum* (Chiroptera: Rhinolophidae) and *Miniopterus schreibersii* (Chiroptera: Vespertilionidae), while *I. vespertilionis* was collected only from *R. ferrumequinum*. This is the first report of *I. simplex* from the Republic of Korea.

**Key words:** bat ticks, *Ixodes simplex*, *Ixodes vespertilionis*, *Miniopterus schreibersii*, *Rhinolophus ferrumequinum*, Republic of Korea

### **Introduction**

Bat ticks are obligately hematophagous ectoparasites—all stages and both sexes feed on the blood of their hosts. However, surveys of bat ticks and any associated pathogens have been few in the Republic of Korea (ROK). The first record of ticks collected from Korean bats appeared in the 1927 edition of the *Illustrated Encyclopedia of the Fauna of Japan* (Kishida 1927), where *Argas vespertilionis* (Latreille) is listed as present in Japan (Honshu, Shikoku, Kyushu, and the Ryukyu Islands) and the Korean peninsula, and where seven species of bats are listed as host animals without further data. Later, Kishida (1936) recorded *Carios* (= *A.*) *vespertilionis* from *Eptesicus coreensis* Kishida, an apparent *nomen nudum* (Kaneko & Maeda 2002), at Heijo (= Pyongyang), Democratic People's Republic of Korea. Noh (1966) recorded one *A. vespertilionis* male collected from *Pipistrellus abramus abramus* (Temminck) at Uijeongbu, Gyeonggi Province, ROK. Yamaguti *et al.* (1968) identified nine *A. vespertilionis* larvae from *Myotis* spp. collected at Kumchon, Gyeonggi Province, ROK, and, subsequently, first recorded *Ixodes vespertilionis* Koch larvae from the greater horseshoe bat, *Rhinolophus ferrumequinum* Schreber, at Tabbari Cave, Wonju, Gangwon Province, ROK (Yamaguti *et al.* 1971). Bat ticks collected during these early surveys were identified to species but were not further analyzed to determine their role in the maintenance, transmission and distribution of zoonotic pathogens. From 1989 to 1998, Lee *et al.* (1998) identified 34 *A. vespertilionis* from 291 *Eptesicus serotinus* Schreber among a total of 802 bats, including nine